

## Notes on the Gazelles

### IV. The Arabian Gazelles collected by Hemprich and Ehrenberg

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#### Abstract

Studied the gazelle specimens collected by HEMPRICH and EHRENBURG in Arabia. Specimens from Farsan Island, described as *Antilope arabica*, represent a distinct taxon, restricted to this island. The correct name for the common Arabian gazelle of the mainland is *Gazella gazella cora* (H. Smith, 1827). The name *Gazella arabica rueppelli* Neumann, 1906, is a synonym of *G. dorcas isabella* Gray.

#### Historical survey

Three gazelles were collected by HEMPRICH and EHRENBURG in their travels down the Red Sea Coast of Arabia in the early 1820s. The specimens, deposited in the Berlin Zoological Museum, are as follows:

ZMB 2108. Adult female, skull and skin. Labelled "Cotype" of *Gazella arabica* Hemprich & Ehrenberg.

ZMB 2109. Juvenile female, skin only.

ZMB 2115. Old male, skull and skin. Labelled "Type" of *Gazella arabica*.

All three are labelled as having been collected in "Arabia" by HEMPRICH and EHRENBURG. No further information as to the exact localities of origin exists, to my knowledge.

The history of the HEMPRICH and EHRENBURG expedition has been recounted by STRESEMANN (1954) on the basis of their correspondence. On December 15th, 1823, HEMPRICH wrote to EHRENBURG from Tor (= El Tur), in Sinai, that he had obtained two gazelles representing a new species. On April 30th, 1825, EHRENBURG wrote to LICHTENSTEIN from Massawa, in Eritrea, that they had collected a gazelle on Farsan Island, in the Red Sea nearer the Arabian side, which they had visited between March 7th and 11th of that same year. In neither letter is any indication given of the sexes of the gazelles, nor any other data.

HEMPRICH and EHRENBURG (1828) specified that the Sinai specimens were from "Hamam Faraun, inter Tor et Sues": this is Gebel Hamman Fara'un, at 29.12 N, 32.59 E. They implied that two species, *Antilope arabica* and *A. dorcas*, occurred together in Sinai ("Dorcadem vero in Arabia prope Tor rarius cum illa occidimus"), but no Arabian specimen other than the three listed above is in the Berlin collection. Their reference to *dorcas* may possibly have been based on the juvenile, ZMB 2109, but this specimen is figured in their plate of *A. arabica* and in that of LICHTENSTEIN (1827). They in fact combined, and figured, the three specimens under the new name *Antilope arabica*; mentioning Farsan as well as Sinai but not distinguishing between specimens from the two localities. Throughout the 19th century the name *Antilope* or *Gazella arabica* was used to cover all gazelles in Arabia.

HAMILTON SMITH (in GRIFFITH 1827) described *Antilope cora* from the Persian Gulf coast of Arabia, but this was generally regarded as a synonym of *G. arabica*, or ignored altogether. BROOKE (1873) separated *G. muscatensis* from Oman, and this in general was

recognised as a species closely allied to *G. arabica*. It was not until the turn of the century that *G. marica*, a second species widely sympatric with *G. arabica*, was described (THOMAS 1897) and well into the present century that the third taxon, *Gazella gazella saudiya*, was noted to be widespread in Arabia (CARRUTHERS and SCHWARZ 1936). GROVES and HARRISON (1967) consider *marica* a subspecies of *G. subgutturosa* and *saudiya* of *G. dorcas*, while *arabica* and *muscatensis* are referred to *G. gazella* as the latter's local representatives in Arabia, the latter from the coast of eastern Oman, the former from the rest of the peninsula.

The first author to query the inclusion of the HEMPRICH and EHRENBERG specimens in a single taxon was NEUMANN (1906). The type of *Gazella arabica* according to this author was "an old Buck from Farsan Island, no. 2115, in the Berlin Museum". The female, no. 2108, represented a new subspecies from Sinai, *Gazella arabica rueppelli*, to which he referred also some specimens in the Frankfurt Museum from "Arabia Petraea" collected by RUEPELL. There was no mention of the juvenile no. 2109. In the same paper NEUMANN also described *G. arabica erlangeri* from Lahadsch (= Lahej), north of Aden, based on a colour plate in SCLATER and THOMAS's (1898) Book of Antelopes.

The characters assigned to these three different races are as follows: *G. a. erlangeri* is described as the darkest of all the small gazelles, with a blackish flank-stripe and a strong grey tone in the body hue. The "true *G. arabica*" has no blackish flank-stripe and no grey tones in the strongly reddish body colour. *G. a. rueppelli* is in its body colour like *G. dorcas* and *G. isidis* (= *G. dorcas isabella*: see GROVES 1969), but the pattern of the head is like *arabica* and *erlangeri*, with a red-brown dorsum nasi and a clear black nose-spot.

NEUMANN thus restricted the type locality of *arabica* to Farsan; STRESEMANN (1954:172) is incorrect in stating that the two Sinai specimens formed the basis for the name *Antilope arabica*.

NEUMANN may have had information not now available to us in stating that the male was from Farsan, the female from Sinai; or he may have reasoned somewhat as follows: two gazelles were obtained from Sinai, one from Farsan. Two museum numbers (2108, 2109) are in sequence, one (2115) separated by a gap. The first two would therefore have been collected together, i.e. from Sinai: one is the adult female, hence the out-of-sequence specimen, the male, would be the single Farsan specimen. Alternatively, one might note that one of the three (2109) is a juvenile; it is likely to have been in company with its mother, hence would belong with 2108, hence these two would have been the Sinai specimens. Either way, the probability is that NEUMANN was correct in nominating 2115 as the type of the species (hence it is the lectotype), and fixing the type locality as Farsan.

This paper redescribes the type series of *Antilope arabica* and attempts to place the specimens in a proper taxonomic context. As the name is one of the earliest available in the genus, it is necessary to decide to which, if any, of the unidentified taxonomic entities listed by GROVES (1968) it belongs.

### The identity of *Gazella arabica rueppelli* Neumann, 1906

Apart from the Berlin adult female, no. 2108, the paradigm of this form included specimens from "Arabia Petraea" (i.e. Sinai), collected by RUEPELL, and housed in the Senckenberg Museum, Frankfurt. These are an adult male and female, SMF nos. 15863 and 15963. Because the Berlin specimen was the only one identified individually by the describer, it is here chosen as lectotype; the two Frankfurt specimens being paralectotypes. It is curious that NEUMANN did not even mention the juvenile skin in Berlin. Apart from these four the only other Sinai specimen seen by me in any collection is a juvenile skull in the Museum of Comparative Zoology, Harvard.

The three adult skulls – one male, two female – are compared in Table 1 with two

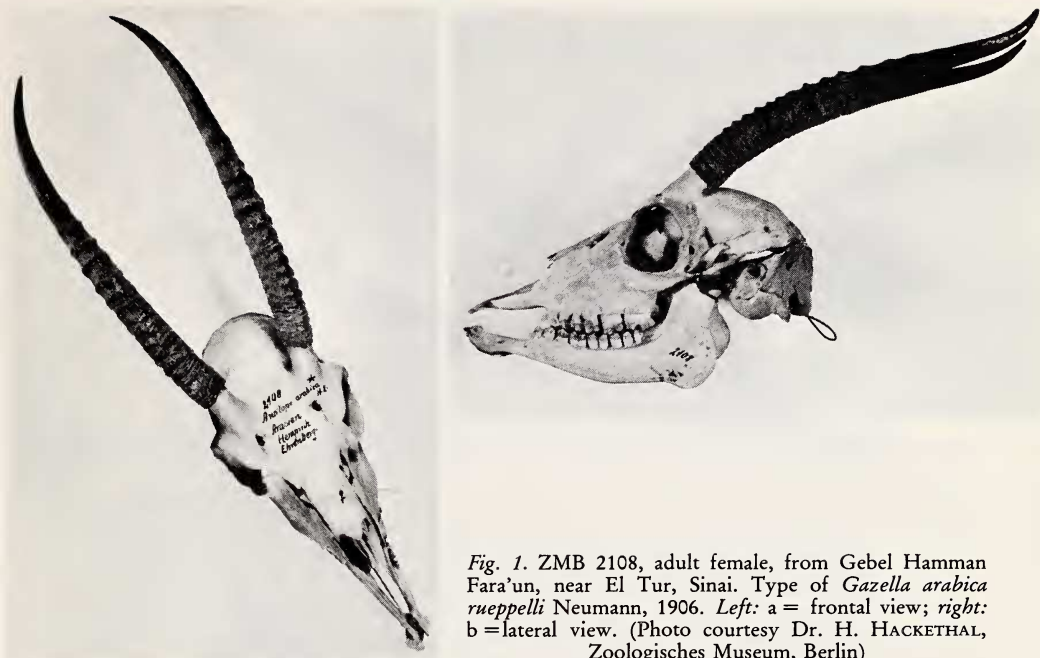


Fig. 1. ZMB 2108, adult female, from Gebel Hamman Fara'un, near El Tur, Sinai. Type of *Gazella arabica rueppelli* Neumann, 1906. Left: a = frontal view; right: b = lateral view. (Photo courtesy Dr. H. HACKETHAL, Zoologisches Museum, Berlin)

subspecies of *Gazella gazella* and two of *G. dorcas*. (The statistics of *G. dorcas* are those of the largest samples of the respective subspecies as listed by GROVES [1981]).

The craniometric differences between *G. gazella* and *G. dorcas* are the latter's smaller teeth and anteriorly expanded nasal bones (both sexes), horns closer together at the base and with more inturned tips (males only), and longer horns in the females. In all of these characters the three *rueppelli* specimens are close to the *G. dorcas* means and far from those of either from of *G. gazella* – beyond the 1 and sometimes the 2 s.d. limits. Visual inspection of the skulls (see Fig. 1) leads to the same conclusion. The nasals send an angular wedge backward into the frontals, and the horns are well ringed, as GROVES and HARRISON (1967) found to be characteristic of *G. dorcas*, and the nuchal surface slopes forward as pointed out for *G. dorcas* by OSBORN and HELMY (1980). The three skulls of *rueppelli* are therefore *G. dorcas*.

The three Sinai skulls fall within the range of variation of *G. d. isabella*, as illustrated by the sample from the Red Sea Hills, and somewhat outside that of *G. d. dorcas* (as represented by specimens mainly from the Western Desert of Egypt). It is the large size of *G. d. isabella* (as compared to *G. d. dorcas* and to the Arabian *G. d. sandiyya*), its shorter nasals (in the male), and greater distance across the horn bases which lead to this conclusion, and the observation that the anterior nasal breadth is not quite as wide as the posterior; the horns are longer than normal for *G. d. isabella* in the females, and have more rings in the single male, though in neither of these features are the Sinai skulls quite outside the range of *G. d. isabella*.

NEUMANN (1906) stated that *G. a. rueppelli* combines a *dorcas*-like body colour with an *arabica*-like facial pattern. The supposed differences in body colour were not defined, and when the wide range of variation is taken into account there is in fact no consistent difference: the pale sandy tones of *G. d. dorcas* are never seen in *G. gazella* nor are the grey hues of the darkest skins of *G. gazella* ever seen in *G. dorcas* (see next section), but many *G. gazella* from Saudi Arabia are identical in colour with *G. d. isabella*. If NEUMANN had in



Fig. 2. ZMB 2115, adult male, from Farsan Island, Saudi Arabia (Red Sea). Type of *Gazella arabica* Lichtenstein, 1827. Left: a = frontal view; right: b = lateral view. (Photo courtesy Dr. H. HACKETHAL, Zoologisches Museum, Berlin)

mind only the Farsan Island skin when speaking of "*G. arabica*", then it is true that in their bright ochery hue with lighter flanks and darker, red-brown, flank-band the Sinai skins do resemble *G. d. isabella* rather than the Farsan skin. The differences in facial pattern – the supposed darker dorsum nasi with black nose-spot – distinguish *G. d. isabella*, as well as *G. gazella*, from *G. d. dorcas*. The *rueppelli* type series seem typical of skins of *Gazella dorcas isabella*.

*Gazella arabica rueppelli* Neumann, 1906, must be regarded as a synonym of *Gazella dorcas isabella* Gray, 1846.

A recent survey of dorcas gazelles in Sinai supports the conclusion that *G. d. isabella* occurs there. FERGUSON (1981) states that *G. d. dorcas* is the form of northern Sinai, *G. d.*



*isabella* of the south; while in the west and centre, and in Israel, hybrids between the two occur. FERGUSON's conclusion is however laid down without supporting evidence, and not all the features used to differentiate the two subspecies are actually diagnostic. Indeed, he illustrates the skull of a female from El Arish (northern Sinai), ascribed to *G. d. dorcas*, which bears a close resemblance to the type of *rueppelli* (Fig. 1). That all Sinai gazelles might actually be referable to *G. d. isabella* rather than to *G. d. dorcas* or hybrids is implied by MENDELSSOHN's (1974) remark that the Israeli Dorcas is similar to *isabella*.

Reports that *G. d. saudiya* or *G. gazella* subsp. might occur in Sinai (HARRISON 1968; OSBORN and HELMY 1980) appear to be based on sight records from the older literature. There are no known specimens of any gazelle but *Gazella dorcas isabella* from anywhere in the Sinai peninsula.

### The status of *Gazella arabica* (Hemprich & Ehrenberg, 1828)

The lectotype of HEMPRICH and EHRENBURG's *Antilope arabica* is an old male: It has short, broad nasals with the typical rounded naso-frontal suture of *G. gazella*, and at first glance an exaggeration of the typical back-sloped nuchal surface; the extreme build-up of bone at the inion may however be pathological. The horns, somewhat blunted by age, depatinated and with their once-prominent rings flattened with wear, are nearly straight, with no tendency for the tips to turn in, and hardly divergent to any degree. The skin is a darker ochre than the adult female Sinai skin; the flank-stripe nearly obsolete; the face with more white on it. The ears are clearly shorter, and unlike either *G. dorcas* or *G. gazella*, the white on the inside of the thigh continues on down the shank to the pasterns. These differences between the two are not adequately brought out in HEMPRICH and EHRENBURG's or LICHTENSTEIN's plates.

The cranial measurements given in Table 2 indicate differences between the type of *G. arabica* and population samples of *G. gazella*. Though as large as *G. g. gazella* the *arabica* skull is much narrower (Biorbital Breadth, and Braincase Breadth, but not Palate Breadth) and elongated both preorbitally and postorbitally even taking the possible pathological condition of the posterior braincase into account; the greater cranial flexure, with marked downsloping of the dorsally flattened braincase, resulting in a skull whose overall length is not excessive. The toothrow is relatively long; the nasals comparatively short. Horn length falls well outside the range of *G. gazella*, and the rings are few in number.

Because the type specimen of *G. arabica* falls outside the range of *Gazella gazella*, as currently defined, the possibility that it might represent a different species is raised. Any question of affinity with the subgenera *Tracheloceles* or *Nanger* can be at once ruled out (see descriptions of these subgenera in GENTRY 1964, and GROVES 1969); within the nominate subgenus, it does not have the characters of *G. rufifrons*, *G. rufina*, *G. leptoceros*, or any of the African races of *G. dorcas*. This leaves only *G. cuvieri*, a large gazelle of uncertain affinities from the Atlas Mountains, and certain races of *G. dorcas* from Asian localities.

Comparison with *G. cuvieri* is necessary only on size grounds; it is inherently unlikely that a gazelle on an arid island should have any relationship to a species of mesic habitat at high altitude, and separated by several thousand kilometers. The measurements (Table 2) show that large size is the only resemblance. The skull of *G. cuvieri* is more elongated preorbitally but less so postorbitally, less flexed, with relatively shorter toothrow and much longer nasals than the lectotype of *G. arabica*; the horn rings are much more numerous. Externally, Cuvier's Gazelle is much darker in colour with a strongly marked black flank-band, very different from the reddish with barely perceptible lateral darkening of the Farsan specimen.

The Indian gazelles, often separated as *Gazella bennetti* (see SCLATER and THOMAS 1898) but included by GROVES (1968) in *G. dorcas*, average larger than the African Dorcas

Table 1

Comparisons of the skull measurements of the type series of *Gazella arabica rueppelli* Neumann, 1906, with populations of *Gazella gazella* and *G. dorcas* (Measurements as defined in GROVES 1969)

	<i>G. gazella gazella</i>			<i>G. gazella</i> (Arabia)			<i>G. a. rueppelli</i>			<i>G. dorcas isabella</i>			<i>G. dorcas dorcas</i>		
	Mean	s.d.	n	Mean	s.d.	n	Male SMF	Female ZMB	SMF 2108	Mean	s.d.	n	Mean	s.d.	n
Skull length															
M	189.0	4.6	8	184.2	6.0	22	186			179.1	4.0	14	167.6	4.5	10
F	174.0	—	1	167.5	6.4	4			173	169.8	5.7	4	162.7	3.6	9
Maxillary tooththrow length															
M	56.8	2.7	11	56.0	2.3	28	51			52.8	2.7	16	51.2	2.2	14
F	55.5	—	2	54.0	2.5	4			52	51.9	2.2	7	50.7	2.0	11
Nasal length															
M	48.9	5.7	10	46.0	5.6	24	40			43.9	4.3	15	46.1	5.8	11
F	47.0	—	2	43.3	5.1	4			46	43.1	2.2	7	40.0	3.7	7
Breadth across horn bases															
M	68.0	2.9	12	64.6	2.2	28	61			61.9	2.5	16	56.8	3.0	13
F	52.0	—	2	50.4	2.5	5			52	51.7	1.9	9	49.6	2.4	11
Horn length															
M	236.6	15.8	11	218.8	17.7	28	227			223.9	25.9	15	235.8	24.2	12
F	114.0	—	2	108.6	7.7	5			177	153.3	14.8	7	181.1	21.7	11
Horn length as % of skull length															
F	74.7		1	65.6		4			102.3	99.5		4	111.3		10
Tip-to-tip as % of horn span															
M	82.3		11	68.0		26	57.3			56.2		14	63.9		9
Nasal breadth ant. as % br. post. Both sexes															
	90.0		13	90.4		30	95.5	90.5	90.9	95.5		21	104.1		21
No. horn rings															
M	15-18		11	14-20		28	20			15-20		10	16-25		13

Table 2

Comparisons of the skull measurements of the type of *Gazella arabica* (Lichtenstein, 1827) with populations of *Gazella* spp.

	<i>G. arabica</i> ZMB 2115	<i>G. g. gazella</i>			<i>G. gazella</i> (Arabia)			<i>G. cuvieri</i>			<i>G. dorcas christyi</i>			<i>G. dorcas</i> (Salt Ra.)		
		Mean	s.d.	n	Mean	s.d.	n	Mean	s.d.	n	Mean	s.d.	n	Mean	s.d.	n
Skull length	194	189.0	4.6	8	184.2	6.0	22	215.5	—	2	191.2	2.9	6	200.3	5.3	4
Biorbital breadth	83	90.4	3.0	11	81.1	2.3	22	95.5	3.0	4	85.5	2.1	25	87.8	3.0	4
Preorbital length	100	95.9	3.0	9	94.3	4.3	24	117.0	—	2	97.8	2.1	6	102.3	3.8	4
Postorbital length	125	110.5	4.1	10	103.9	4.4	27	114.8	3.2	4	103.7	3.8	7	111.0	4.6	4
Braincase breadth	55	62.9	3.0	11	59.6	2.4	26	69.5	4.2	4	64.6	2.4	7	64.3	5.1	4
Palate breadth	51	53.8	2.4	11	45.4	2.0	28	55.3	1.0	4	48.4	2.3	7	50.8	1.0	4
Toothrow length	63	56.8	2.7	11	56.0	2.3	28	62.6	2.2	5	57.4	1.6	7	58.3	2.9	4
Nasal length	34	48.9	5.7	10	46.0	5.6	24	60.7	5.9	3	54.1	5.3	7	57.3	1.5	3
Breadth horn bases	66	68.0	2.9	12	64.6	2.2	28	71.3	5.8	6	64.5	2.3	26	67.0	2.2	4
Horn length	272	236.6	15.8	11	218.8	17.7	28	328.2	26.6	5	284.3	19.1	26	273.3	20.1	4
No. horn rings	15	15-18		11	14-20		28	24-30		5	14-23			14-14		

or the Arabian *G. d. saudiya*, and as relevant in the present context the nasals are more posteriorly broadened and the horns are straighter and not inturned at the tips. There are a number of distinct races in India, and measurements of two of them are given here, selected as being of similar absolute size to the Farsan skull, and – in one case at least – based on a reasonable sample. Again, however, these have less cranial flexion and a much shorter, broader (and more rounded) braincase, shorter tooththrow, and much longer nasals. The horn rings are much more prominent than in the Farsan skull, even taking the latter's age into account.

The lectotype of *arabica* differs from all other known gazelle specimens. Its large size, elongated rostrum and braincase, flattened downsloping braincase, general narrowness, extremely short nasals, and long straight horns distinguish it from *G. gazella* and *G. dorcas*. The question must be asked: are these characters, unique though they are, in some way abnormal – consequent perhaps on the suspected pathology of the occiput – or are they of taxonomic significance? A final conclusion will of course depend on examination of further specimens from Farsan.

One such specimen, the severely damaged skull of a female, BM 27.10.3.1, exists. In the absence of a full Skull Length measurement (the rostrum is partly missing), Palate Breadth and Horn Base Breadth can be used as size indicators. In the BM female, Palate Breadth is 41 mm, Horn Base Breadth 45 mm: both these measurements are well below the means for Arabian *G. gazella* ( $44.0 \pm 3.8$  and  $50.4 \pm 2.5$ , respectively). The braincase is somewhat flattened but not elongated (83 mm, compared to  $92.0 \pm 3.2$  in Arabian *G. gazella*); but the skull is very narrow (Skull Breadth 63, cf.  $75.4 \pm 3.4$  in Arabian *G. gazella*; Braincase Breadth 46, cf.  $54.3 \pm 2.2$ ). Palate Breadth, expressed as a percentage of Braincase Breadth, is 89.1; in the type of *arabica* it is 92.7; in no other species of the *G. gazella* or *G. dorcas* groups is it above 82.1 %.

The evidence, incomplete as it is, suggests that Farsan Island is inhabited by a unique gazelle taxon notable for its very narrow skull at the very least; and a remarkable degree of sexual dimorphism is implied.

## Discussion

The taxonomy of Arabian gazelles is beginning to look more complex than formerly (GROVES and HARRISON 1967). Apart from *G. (Tracheloceles) subgutturosa marica*, whose status is not questioned and which is only distantly related to the others, we have the following:

1. The Palestine Gazelle, *Gazella gazella gazella* Pallas, 1766. According to MENDELSSOHN (1974), a more northerly submontane from and a desertic race from southern Israel are currently confounded under this name.
2. The common Arabian Gazelle. The correct name for this form, as discussed below, is *Gazella gazella cora*. GROVES and HARRISON (1967) argue that this is conspecific with the Palestine Gazelle, but the question is not absolutely closed and evidence that they do actually intergrade is needed.
3. The Muscat Gazelle, *G. g. muscatensis* Brooke, 1873. As discussed by HARRISON (1968), this is probably conspecific with the common Arabian Gazelle, but ROSTRON'S (1972) finding that on multivariate analysis it falls with *G. dorcas* is curious and the question still needs to be kept open.
4. The Saudi Gazelle, *G. dorcas saudiya* Carruthers & Schwarz, 1936. This distinctive, diminutive gazelle was placed by GROVES and HARRISON (1967) in *G. dorcas*, but it remains to be demonstrated that it does in fact intergrade with acknowledge representatives of the latter.
5. The Isabelline Dorcas Gazelle, *G. dorcas isabella* Gray, 1846 (synonym *G. arabica rueppelli* Neumann, 1906). As discussed above, this would seem to be the only gazelle in



Sinai, and it evidently extends into Israel, where it replaces the Saudi Gazelle. Its borders with the latter and with the Common Arabian Gazelle need to be investigated; the considerable similarity with the latter, as noted earlier, leave the question open whether it might not be this, rather than *saudiya*, with which the present form intergrades. In such a case, of course, the common Arabian Gazelle would have to be included in *G. dorcas* while *saudiya* would be raised to specific rank and *gazella* (with which *isabella* is presumably sympatric in Israel) would be reduced to a monotypic species.

6. Yemen Gazelle, called "*G. gazella* subsp." by GROVES and HARRISON (1967) and by GROVES (1969); but it is specifically distinct, and will be discussed in a forthcoming publication (GROVES and LAY, in press).
7. Farsan Island Gazelle, *G. arabica* Lichtenstein, 1827. The relationship of this gazelle will be easier to elucidate once the interrelationships of the other Arabian taxa become clearer. For the present it is recommended that this distinctive form be recognised as a species apart from the rest.

If the name *arabica* is no longer available for the taxon listed as no. (2) above and called the common Arabian Gazelle, what name should be used? There are three other to be considered: *Gazella arabica erlangeri* Neumann, 1905; *Gazella arabica hanishi* Dollman, 1927; and *Antilope cora* H. Smith, 1827.

HARRISON (1968) emphasises the great variation in colour among "Arabian Gazelles" (i.e. taxon [2] above), and draws attention to a geographic component. Essentially, it can be said that along the western seaboard of the peninsula (the Red Sea coast) the gazelles of this taxon tend to be rather dark, browngray, the flanks and haunches being noticeably paler than the back, the lateral flank-stripe being very broad and dark and the pygal band well-expressed, the forehead dark red-brown, a blackish nose-spot and a very narrow dark brown stripe bordering the white face-stripe below. This type predominates in the Aden district and north via Jeddah and the Hejaz into Israel, where the colour of *G. g. gazella* is of this type except that the forehead is blackish. The central desert type is lighter, more ochery, with less contrast between the back and the flanks and haunches, the flank and pygal bands less well-marked, the dark facial stripe vaguer, and the nose-spot often poorly developed, even absent in a few. These two forms intergrade insensibly, and many desert skins could be lost in a coastal sample, and vice versa.

The type of *G. a. erlangeri*, as illustrated by SCLATER and THOMAS (1898, pl. 59), from a living zoo specimen not apparently preserved, is clearly of the coastal type. Skins in Berlin from Lahej (to which a name "lahadschensis", never apparently published, has been applied on the labels, perhaps by NEUMANN) confirm that the coastal type of "taxon (2)" is intended by this name, as do four skins and two skulls from Aden in the British Museum.

The type (and only topotypical specimen) of *G. a. hanishi* is a mounted head in the British Museum. It is evidently an example of the desert type with simply an unusual nasal marking (DOLLMAN 1927). The horns are similar to mainland gazelles.

The name *Antilope cora* was applied by HAMILTON SMITH (1827) to a pair of gazelles from "the shores of the Persian Gulf, eastern Arabia" (SMITH in GRIFFITH 1827, 5:333) or "from India, or more properly from the Persian Gulph" (1827, 4:216), living in the old Tower of London menagerie. Again, it is not clear that they were preserved after death. The horns of the male were 5 inches (125 mm) long, smooth and without striae, with the points turned backwards; those of the female, similar but only 4 inches (100 mm) long. These figures, together with the body measurements, suggest immature animals. The yellowish rufous colour with dark flank streak, and the facial pattern (white stripes bordered with black, and rufous forehead and nose with no mention of a nose-spot), indicate the desert type of "taxon (2)", the *bennetti* group being excluded by such features as the well-marked white stripes.

Since the coastal and desertic types are consubspecific, both names in effect apply to the common Arabian Gazelle, previously called *Gazella gazella arabica*; it must now be

known (assuming its specific assignment to be correct) as *Gazella gazella cora* (H. Smith 1827), with *erlangeri* Neumann, 1906 and *hanishi* Dollman, 1927, junior synonyms.

## Conclusions

This paper reveals several deficiencies in knowledge about the gazelles of Arabia. The name *Gazella arabica* applies to a distinctive gazelle, probably a distinct species, from Farsan Island in the Red Sea, and not to the widespread Arabian form, which should be known as *G. g. cora*. But this latter has distinct similarities with *G. dorcas isabella*, now known to range via Sinai (where it is probably the only gazelle) into Israel. NEUMANN's *Gazella arabica rueppelli* is a synonym of *G. d. isabella*, and his *G. a. erlangeri* a synonym of *G. g. cora*. To resolve some of the outstanding problems, gazelles from border regions need to be studied.

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## Zusammenfassung

### *Bemerkungen über Gazellen. IV. Die von Hemprich und Ehrenberg gesammelten arabischen Gazellen*

Diskutiert wird die taxonomische Stellung der arabischen Gazellen an Hand von Untersuchungsmaterial, welches HEMPRICH und EHRENBURG sammelten. Individuen von Farsan Island im Roten Meer, als *Antilope arabica* beschrieben, repräsentieren wahrscheinlich ein eigenes Taxon. Sie können nicht zu *Gazella gazella* gestellt werden. Zur Benennung der arabischen Festland-Gazelle wird *Gazella gazella cora* (H. Smith, 1827) vorgeschlagen. Der Name *Gazella arabica rueppelli* Neumann, 1906 ist ein Synonym von *Gazella dorcas isabella* Gray.

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## WISSENSCHAFTLICHE KURZMITTEILUNG

### Identifizierung der Palästina-Genetten von J. Aharoni als *Vormela peregusna* (Güldenstaedt, 1770)

Von D. KOCK

*Eingang des Ms. 5. 5. 1983*

SCHLAWE (1981: 117–119) hat geklärt, wie TRISTRAM (1884) zu der Angabe überzeugt wurde, ‚*Genetta vulgaris*‘ (die spätere *Genetta terraesanctae* Neumann, 1902) käme am Mt. Carmel in Palästina vor; tatsächlich handelte es sich um einen falsch etikettierten Genetten-Beleg aus Algerien. Neuzeitliche Nachweise für Palästina fehlen (HARRISON 1968; ILANI 1977), aber es bleiben AHARONIS (1930) und BODENHEIMERS (1935, 1937) Angaben zu Genettenvorkommen für dieses Gebiet sowie eine verborgene Quelle (vgl. SCHLAWE 1981: „AHARONI 1912, p. 400 gibt es nicht“). Tatsächlich liegt in letzterer aber der Schlüssel zur Aufklärung.

AHARONI (1912) beschreibt eine ‚Zibethkatze‘, die „einer *Viverra genetta*“ glich, bräunlich gelb gefärbt war, auf Rücken und Bauchseite (d. h. nicht ventral, sondern Seiten des Bauches) mit fast schwarzen Flecken und auf der Nase mit einem weißen Querstreifen gezeichnet war. Er erhielt das Exemplar 1908 lebend im Wadi Fauwar des damaligen türkischen Palästina (es mündet an der SO-Seite des Toten Meeres in die Bucht östl. der Lisan-Halbinsel, Jordanien; auf neueren Karten wird es als Wadi Jarra bezeichnet, ca. 31° 18' N – 35° 35' E)

BLANCKENHORN (1912: 278) sah die fragliche ‚junge Zibethkatze‘ in AHARONIS Tier-sammlung und bezeichnete sie als ‚*Viverra sarmatica*‘. Diese Identifizierung entspricht AHARONIS (1912) Beschreibung, die in diesem Teil des Nahen Osten nur auf *Vormela peregusna* (Güldenstaedt, 1770; syn.: *Mustela sarmatica* Pallas, 1771) paßt. Das Exemplar wurde (zusammen mit anderen lebenden Säugern und Vögeln sowie naturwissenschaftlichen Sammlungen) für ein Naturalienkabinett und eine Menagerie des Sultans nach Konstantinopel transportiert. Ein erhaltener Sammlungsbeleg ist also kaum zu erwarten.